

sides; less refrangible than that in the red was a very broad but pale band; less refrangible than this, nearly at the limit of the spectrum, was visible a very dark band, the blackest of all.

The positions of the bands were as follows:—

1. from 584.6 to 567.5 *
2. „ 603.1 „ 589.2
3. „ 639.5 „ 627.9 *
4. „ 711.0 „ 661.7
5. „ 739.0 „ 711.9

The correction of the zero point of the micrometer was deduced by observation of the bright sodium line in an alcohol flame.

The bands marked * clearly correspond to the lines of atmospheric vapour.

Spectroscopic Observations of Comet Pons-Brooks made at the Observatory O-Gyalla, Hungary. By Dr. N. de Konkoly.

The comet was observed in different phases of its brightness. I made the first observation on September 27 of the past year, using a spectroscope of little dispersion; I found three very ill-defined bright lines in its spectrum.

The second observation was on November 22 in tolerably steady air, at 5^h 50^m O-Gyalla M.T. The spectrum of the comet was pretty bright, and also the three bands, which were not at all difficult to measure. The position of the bands from the mean of three measures were—

I.	II.	III.
561.0	516.5	471.6 mmm.

I estimated the brightness of the bands respectively as 0.3, 1.0, and 0.5, beginning at the red end of the spectrum, the brightness of band II. being taken as unity.

A faint continuous spectrum was visible between wavelengths 608.0 to 447.4.

I next observed the spectrum of the comet on November 29, 6^h 50^m to 7^h 30^m. Band II. in the spectrum was very bright and remarkable. All three bands were pointed at their ends, and badly defined on both sides, a little swollen in the middle and overflowing in the faint continuous spectrum. This was very defined on band II.

The positions of the three bands from the mean of four observations was—

I.	II.	III.
560.9	516.5	471.4 mmm.

The brightness of the bands was estimated as 0.3, 1.0, and

0.5. The limits of the continuous spectrum were 616.2 and 434.6 mmm. wave-lengths.

The astronomer of my observatory, M. Rudolf de Kövesligethy, measured band II. on December 7, and found it a little less refrangible than I did (517.3), but M. Kövesligethy supposed it so himself.

On December 23 we measured the positions of the bands in the large 10-inch refractor. We saw a very well defined continuous spectrum corresponding to the nucleus of the comet. The bands were very well defined on the side towards the red and shaded off on the other side. I measured the edge of band II. five times, and the maxima of the light from all the bands also five times. M. Kövesligethy measured also the edge of band II. and the maximum of III. The results were—

I. Maxim.	II. Edge.	II. Maxim.	III. Maxim.	Observer.
560.2	519.5	516.8	471.8	Konkoly
—	519.0	—	473.2	Kövesligethy.
Brightness: 0.3	—	1.0	0.6	—

The observations were made at 6^h 40^m; the comet was 45° above the horizon.

On December 26 M. Kövesligethy observed the spectrum and found the following positions for the bands:—

	I.	II.	III.
	558.5	517.0	477.4
Intensity:	0.2	1.0	0.6

On December 29, 5^h 30^m, I observed the spectrum of the comet with a large Browning spectroscope provided with 2 fine prisms of 60° refractive angle. The spectrum was very bright, and I was able to count six bright bands. Band Ia was a very faint one, but very well defined at the edge towards the red and shaded off towards the violet. The second band I. (the first ordinary comet-band) was also well defined towards the red, and showed two maxima of brightness. Band II. was very intense, and showed also two maxima, the edge towards the red being the brighter one. The third cometary band was very broad, and had a sufficiently well defined edge towards the red end; there was also a broad maximum. This band still showed two maxima, but they were somewhat faint.

Band IV. had a light maximum on both sides, much shaded off and badly defined; the ends were pointed as the bands of the spectra of very faint comets. Band V. was broad, but very faint; sharply defined towards the red, and shaded off towards the violet. The slit was open 0.4 mm.

The relative intensity of the bands was estimated to be 0.3,

0.4, 1.0, 0.6, 0.3, 0.1. Clouds prevented me from any series of measures, but I made a good drawing of the spectrum.

M. Kövesligethy made a series of measurements with the other instruments; he found the positions of the three ordinary cometary bands (6-inch refractor).

I. Maxim	II. Edge	II. Maxim	III. Maxim
560.7	518.1	511.6	471.6

On December 30 a set of measures made by M. Kövesligethy gave—

I. Maxim.	II. Edge.	II. Maxim.	III. Maxim.
558.5	514.8	511.6	478.4

and on December 31 the same observer found—

I. Maxim.	II. Edge.	II. Maxim.	III. Maxim.
558.5	515.2	511.2	472.7

On 1884, January 1, 6^h 10^m, I observed the spectrum of the comet and made a good drawing of it, but clouds prevented me making exact measures. With the universal spectroscope by Merz, with one direct vision spectroscope of 5 prisms on the 10-inch refractor I again saw the six bands just as I saw them on December 29.

M. Kövesligethy made two series of measures, one with the Merz spectroscope on the 10-inch refractor, the other with a smaller spectroscope on the 6-inch refractor. He found the positions—

	I. Maxim.	II. Edge.	II. Maxim.	III. Maxim.
1. —	—	—	515.8	470.1
2. 563.0	517.3	—	511.6	473.3
Intensity: 0.3	—	—	1.0	0.6

A faint but well-defined continuous spectrum was observed on each occasion.

Observations of Pons' Comet made at the U.S. Naval Observatory, Washington. By W. T. Sampson and Edgar Frisby.

(Communicated by the Secretaries.)

Adopted Mean Positions of Comparison Stars.														
Wash. M.T.		Comet- $\star$ $\Delta\alpha$		No of Com.	Comet.		log. ($p \times \Delta$)	Comet.		log. ($p \times \Delta$)	Com. Star.	α		Authority.
					$\Delta\delta$	δ app.		δ app.	1884 ^o .			1884 ^o .		
1884.	h m s	m s	' "		h m s	' "		' "	h m s	' "		h m s	' "	
Jan. 2	5 46 50.0	+2 31.64	+ 5 45.0	20.4	21 53 30.44	9.503		+20 47 14.0	0.519	S. 1	1	21 50 59.10	+20 41 17.6	Weisse (2) 21, 1209
2	6 0 5.3	-1 24.42	- 0 56.4	20.4	21 53 34.48	9.531		+20 46 20.0	0.531	S. 2	2	21 54 59.18	+20 47 5.0	" (2) 21, 1318
3	5 39 53.3	-4 11.65	+ 4 37.6	20.4	22 0 35.66	9.475		+19 7 49.4	0.536	S. 3	3	22 4 47.54	+19 3 1.1	" (2) 22, 67 & 68
3	7 14 8.9	-0 53.65	+ 6 25.3	20.4	22 1 2.87	9.630		+19 1 4.6	0.618	S. 4	4	22 1 56.77	+18 54 28.6	Ll. + Rüm. + Lam.
5	5 39 40.5	+1 24.73	- 1 49.6	20.4	22 14 39.15	9.450		+15 38 57.5	0.582	S. 5	5	22 13 14.64	+15 40 37.7	Weisse 22, 233
6	7 8 55.7	-1 18.78	- 0 24.8	20.4	22 21 59.81	9.602		+13 44 2.2	0.653	S. 6	6	22 23 18.77	+13 44 18.4	22, 460
7	7 19 46.1	-2 28.32	- 5 47.1	20.4	22 28 52.50	9.608		+11 52 57.3	0.671	S. 7	7	22 31 20.97	+11 58 36.5	22, 626
9	7 29 7.9	-0 30.58	+ 0 44.9	25.5	22 42 14.26	9.607		+ 8 7 15.7	0.698	F. 8	8	22 42 44.97	+ 8 6 24.4	22, 866
3	20 4.6	-2 38.24	- 3 12.8	30.4	23 7 3.89	9.480		+ 0 37 30.3	0.738	S. 9	9	23 9 42.18	+ 0 40 39.8	23, 145
17	7 27 27.8	+3 30.07	- 1 0.1	15.3	23 30 8.96	9.585		- 6 47 39.9	0.774	F. 10	10	23 26 38.99	- 6 46 40.0	23, 502
20	6 2 16.2	+1 11.30	- 4 42.7	25.5	23 45 20.31	9.419		-11 49 34.8	0.818	S. 11	11	23 44 9.12	-11 44 49.9	23, 868
21	6 0 43.1	-0 58.02	+ 9 32.1	20.4	23 50 10.27	9.415		-13 27 3.4	0.827	S. 12	12	23 51 8.40	-13 36 32.5	23, 1014
21	7 10 53.7	+0 35.75	+16 24.8	25.5	23 50 24.10	9.565		-13 31 23.1	0.806	F. 13	13	23 49 48.47	-13 47 44.9	W. + Lamont + Stone
22	7 21 27.7	+0 41.40	+ 1 36.8	20.4	23 55 7.18	9.582		-15 6 33.0	0.807	S. 14	14	23 54 25.91	-15 8 6.2	Arg. Oeltz. S. 23179
25	7 4 26.7	-0 30.76	+ 3 38.6	30.6	0 8 13.98	9.565		-19 30 58.6	0.828	S. 15	15	0 8 44.89	-19 34 31.8	Stone 70
26	6 3 47.0	+1 20.58	+ 1 15.4	20.4	0 12 9.76	9.435		-20 50 6.2	0.858	S. 16	16*	0 10 49.34	-20 51 15.9	Ll. 234
Feb. 1	6 55 21.0	+1 42.42	+ 6 7.0	20.4	0 34 4.88	9.580		-28 9 37.7	0.851	F. 17	17	0 32 22.73	-28 15 36.0	Arg. Oeltz. S. 315

* Baily's reduction of this star is 1' wrong. Compare also Gould's "Uranometria Argentina."